Amendments to the Claims:

This listing of claims will replace all prior versions of the claims in this application:

Listing of Claims:

Claim 1 (previously presented): A method for making a structured screen that provides a desired spread of incident light, said structured screen comprising a substrate and a plurality of microstructures distributed over at least one surface of said substrate, said method comprising:

(a) selecting a location on said at least one surface of the substrate for each of said plurality of microstructures;

(b) selecting a configuration for each of said plurality of microstructures;

(c) calculating the spread of the incident light for the selected locations and the selected configurations of steps (a) and (b);

(d) comparing the calculated spread of step (c) with the desired spread and, if necessary, repeating at least one of steps (a) and (b), and step (c) until the comparison between the calculated spread and desired spread satisfies a specified criterion; and

(e) producing a plurality of microstructures having, to an accuracy of better than $10 \bullet \lambda_n$, the locations and the configurations which, in step (d), resulted in the satisfaction of the specified criterion, where λ_n is the nominal operating wavelength for the screen,

wherein at least some of the microstructures comprise a curved microlens portion or a triangular portion or a pyramidal portion.

Claim 2 (original): The method of Claim 1 wherein the locations selected in step (a) form a regular array.

Claim 3 (previously presented): A method for making a structured screen that provides a desired spread of incident light, said structured screen comprising a substrate and a plurality of microstructures distributed over at least one surface of said substrate, said method comprising:

(a) selecting a location on said at least one surface of the substrate for each of said plurality of microstructures;

(b) selecting a configuration for each of said plurality of microstructures;

(c) calculating the spread of the incident light for the selected locations and the selected configurations of steps (a) and (b);

(d) comparing the calculated spread of step (c) with the desired spread and, if necessary, repeating at least one of steps (a) and (b), and step (c) until the comparison between the calculated spread and desired spread satisfies a specified criterion; and

(e) producing a plurality of microstructures having, to an accuracy of better than $10 \bullet \lambda_n$, the locations and the configurations which, in step (d), resulted in the satisfaction of the specified criterion, where λ_n is the nominal operating wavelength for the screen;

wherein the locations selected in step (a) form a hexagonal array.

Claim 4 (previously presented): A method for making a structured screen that provides a desired spread of incident light, said structured screen comprising a substrate and a plurality of microstructures distributed over at least one surface of said substrate, said method comprising:

(a) selecting a location on said at least one surface of the substrate for each of said plurality of microstructures;

(b) selecting a configuration for each of said plurality of microstructures;

(c) calculating the spread of the incident light for the selected locations and the selected configurations of steps (a) and (b);

(d) comparing the calculated spread of step (c) with the desired spread and, if necessary, repeating at least one of steps (a) and (b), and step (c) until the comparison between the calculated spread and desired spread satisfies a specified criterion; and

(e) producing a plurality of microstructures having, to an accuracy of better than $10 \bullet \lambda_n$, the locations and the configurations which, in step (d), resulted in the satisfaction of the specified criterion, where λ_n is the nominal operating wavelength for the screen;

wherein the locations selected in step (a) are based on a set of unit cells which form a mosaic at least a portion of which is not a regular array.

Claim 5 (original): The method of Claim 4 wherein the mosaic is random.

Claim 6 (original): The method of Claim 4 wherein the structured screen has internal microstructures and edge microstructures and the mosaic provides at least some junctions between internal microstructures that correspond, in terms of light spreading, to at least some junctions between edge microstructures resulting from the tiling of two structured screens to one another.

Claim 7 (previously presented): A method for making a structured screen that provides a desired spread of incident light, said structured screen comprising a substrate and a plurality of microstructures distributed over at least one surface of said substrate, said method comprising:

(a) selecting a location on said at least one surface of the substrate for each of said plurality of microstructures;

(b) selecting a configuration for each of said plurality of microstructures;

(c) calculating the spread of the incident light for the selected locations and the selected configurations of steps (a) and (b);

(d) comparing the calculated spread of step (c) with the desired spread and, if necessary, repeating at least one of steps (a) and (b), and step (c) until the comparison between the calculated spread and desired spread satisfies a specified criterion; and

(e) producing a plurality of microstructures having, to an accuracy of better than $10 \bullet \lambda_n$, the locations and the configurations which, in step (d), resulted in the satisfaction of the specified criterion, where λ_n is the nominal operating wavelength for the screen;

wherein at least some of the locations selected in step (a) are randomly distributed in accordance with a predetermined probability density function.

Claim 8 (previously presented): A method for making a structured screen that provides a desired spread of incident light, said structured screen comprising a substrate and a plurality of microstructures distributed over at least one surface of said substrate, said method comprising:

(a) selecting a location on said at least one surface of the substrate for each of said plurality of microstructures;

(b) selecting a configuration for each of said plurality of microstructures;

(c) calculating the spread of the incident light for the selected locations and the selected configurations of steps (a) and (b);

(d) comparing the calculated spread of step (c) with the desired spread and, if necessary, repeating at least one of steps (a) and (b), and step

(c) until the comparison between the calculated spread and desired spread satisfies a specified criterion; and

(e) producing a plurality of microstructures having, to an accuracy of better than $10 \bullet \lambda_n$, the locations and the configurations which, in step (d), resulted in the satisfaction of the specified criterion, where λ_n is the nominal operating wavelength for the screen;

wherein the locations of the microstructures are based on a random set of polygonal shaped boundaries.

Claim 9 (original): The method of Claim 1 wherein in step (b) at least a portion of at least some of the microstructures is selected to have a configuration given by:

$$s(x,y) = \frac{c\left[(x-x_c)^2+(y-y_c)^2\right]}{1+\sqrt{1-(\kappa+1)c^2\left[(x-x_c)^2+(y-y_c)^2\right]}} + \sum_p A_p\left[(x-x_c)^2+(y-y_c)^2\right]^{p/2}$$

where s(x,y) is the sag of said portion, c is its curvature, (x_c, y_c) is its center point, κ is a conic constant, and A_p are aspheric coefficients.

Claim 10 (original): The method of Claim 9 wherein $A_p \neq 0$ for at least one p.

Claim 11 (original): The method of Claim 9 wherein $\kappa \neq 0$.

Claim 12 (original): The method of Claim 9 wherein:

$\kappa = -1$; and

$A_p = 0$ for all p.

Claim 13 (original): The method of Claim 1 wherein in step (b) at least a portion of at least some of the microstructures is selected to have a configuration given by:

$$s(x,y)=\sum_{p=1}^{\infty} B_p(x-x_c)^p + C_p(y-y_c)^p$$

where s(x,y) is the sag of said portion, (x_c, y_c) is its center point, and B_p and C_p are power series coefficients.

Claim 14 (previously presented): A method for making a structured screen that provides a desired spread of incident light, said structured screen comprising a substrate and a plurality of microstructures distributed over at least one surface of said substrate, said method comprising:

(a) selecting a location on said at least one surface of the substrate for each of said plurality of microstructures;

(b) selecting a configuration for each of said plurality of microstructures;

(c) calculating the spread of the incident light for the selected locations and the selected configurations of steps (a) and (b);

(d) comparing the calculated spread of step (c) with the desired spread and, if necessary, repeating at least one of steps (a) and (b), and step (c) until the comparison between the calculated spread and desired spread satisfies a specified criterion; and

(e) producing a plurality of microstructures having, to an accuracy of better than 10•λ_n, the locations and the configurations which, in step (d), resulted in the satisfaction of the specified criterion, where λ_n is the nominal operating wavelength for the screen;

wherein at least some of the microstructures comprise (i) a curved, microlens portion and (ii) a straight-sided, piston portion.

Claim 15 (original): The method of Claim 1 wherein at least some of the microstructures comprise an anamorphic microlens.

Claim 16 (original): The method of Claim 1 wherein in step (b) at least a portion of at least some of the microstructures is selected to have a configuration given by:

$$s(x,y)=\frac{c_x(x-x_c)^2+c_y(y-y_c)^2}{1+\sqrt{1-(1+\kappa_x)c_x(x-x_c)^2+(1+\kappa_y)c_y(y-y_c)^2}}$$

where s(x,y) is the sag of said portion, (x_c, y_c) is its center point, c_x and c_y are curvatures along x and y, respectively, and κ_x and κ_y are conic constants along x and y, respectively.

Claim 17 (original): The method of Claim 1 wherein in step (b) at least a portion of at least some of the microstructures is selected to have a configuration given by:

$$s(x,y)=\frac{c_x(x-x_c)^2}{1+\sqrt{1-(1+\kappa_x)(x-x_c)^2}}+\frac{c_y(y-y_c)^2}{1+\sqrt{1-(1+\kappa_y)(y-y_c)^2}}+\sum_p A_{xp}(x-x_c)^p+A_{yp}(y-y_c)^p$$

where s(x,y) is the sag of said portion, (x_c, y_c) is its center point, c_x and c_y are curvatures along x and y, respectively, κ_x and κ_y are conic constants along x and y, respectively, and A_{xp} and A_{yp} are aspheric coefficients along x and y, respectively.

Claim 18 (original): The method of Claim 1 wherein:

(a) at least a portion of at least some of the microstructures is selected to have a configuration characterized by at least one parameter; and

(b) said at least one parameter is randomly distributed in accordance with a predetermined probability density function.

Claim 19 (original): The method of Claim 18 wherein the at least one randomly distributed parameter has a uniform probability density function over a predetermined range for the parameter.

Claim 20 (original): The method of Claim 18 wherein the at least one randomly distributed parameter is radius of curvature.

Claim 21 (original): The method of Claim 18 wherein the at least one randomly distributed parameter is maximum surface sag.

Claim 22 (previously presented): A method for making a structured screen that provides a desired spread of incident light, said structured screen comprising a substrate and a plurality of microstructures distributed over at least one surface of said substrate, said method comprising:

(a) selecting a location on said at least one surface of the substrate for each of said plurality of microstructures;

(b) selecting a configuration for each of said plurality of microstructures;

(c) calculating the spread of the incident light for the selected locations and the selected configurations of steps (a) and (b);

(d) comparing the calculated spread of step (c) with the desired spread and, if necessary, repeating at least one of steps (a) and (b), and step

(c) until the comparison between the calculated spread and desired spread satisfies a specified criterion; and

(e) producing a plurality of microstructures having, to an accuracy of better than $10\bullet\lambda_n$, the locations and the configurations which, in step (d), resulted in the satisfaction of the specified criterion, where λ_n is the nominal operating wavelength for the screen;

wherein:

(i) at least a portion of at least some of the microstructures is selected to have a configuration characterized by at least one parameter;

(ii) said at least one parameter is randomly distributed in accordance with a predetermined probability density function; and

(iii) the at least one randomly distributed parameter is characteristic of the transverse size of a microstructure.

Claim 23 (original): The method of Claim 22 wherein the parameter is diameter.

Claim 24 (original): The method of Claim 1 wherein:

(a) at least some of the microstructures comprise (i) a curved, microlens portion and (ii) a straight-sided, piston portion; and

(b) the heights of the straight-sided, piston portions are randomly distributed in accordance with a predetermined probability density function.

Claim 25 (original): The method of Claim 24 wherein the heights of the straight-sided, piston portions have a uniform probability density function over a predetermined range for said heights.

Claim 26 (original): The method of Claim 1 wherein:

(a) at least some of the microstructures have an apex, said apex being separated from the substrate by a distance; and

(b) at least some of said distances are randomly distributed in accordance with a predetermined probability density function.

Claim 27 (original): The method of Claim 26 wherein said randomly distributed distances have a maximum value and the difference between said maximum value and said randomly distributed distances has a uniform probability density function over a predetermined range for said difference.

Claim 28 (original): The method of Claim 1 wherein the substrate defines a first optical axis and the configuration of at least some of the microstructures comprises a microlens which defines a second optical axis which is not parallel to the first optical axis.

Claim 29 (original): The method of Claim 1 wherein as produced in step (e), the plurality of microstructures have, to an accuracy of better than $5 \bullet \lambda_n$, the locations and the configurations which, in step (d), resulted in the satisfaction of the specified criterion.

Claim 30 (original): The method of Claim 1 wherein step (e) comprises direct laser writing in a photoresist.

Claim 31 (previously presented): A method for making a structured screen that provides a desired spread of incident light, said structured screen comprising a substrate and a plurality of microstructures distributed over at least one surface of said substrate, said method comprising:

(a) selecting a location on said at least one surface of the substrate for each of said plurality of microstructures;

(b) selecting a configuration for each of said plurality of microstructures;

(c) calculating the spread of the incident light for the selected locations and the selected configurations of steps (a) and (b);

(d) comparing the calculated spread of step (c) with the desired spread and, if necessary, repeating at least one of steps (a) and (b), and step (c) until the comparison between the calculated spread and desired spread satisfies a specified criterion; and

(e) producing a plurality of microstructures having, to an accuracy of better than $10 \bullet \lambda_n$, the locations and the configurations which, in step (d), resulted in the satisfaction of the specified criterion, where λ_n is the nominal operating wavelength for the screen;

wherein microstructures are distributed over two of the substrate's surfaces.

Claim 32 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures, at least some of which comprise a curved microlens portion or a triangular portion or a pyramidal portion, each microstructure being located with better than $10 \bullet \lambda_n$ accuracy at a predetermined location with respect to all other microstructures and each microstructure having a configuration that corresponds, with better than $10 \bullet \lambda_n$ accuracy, to a predetermined mathematical relation, where λ_n is the nominal operating wavelength of the apparatus and said predetermined locations and predetermined mathematical relations allow an a priori calculation of the spreading of incident light by the apparatus.

Claim 33 (original): The apparatus of Claim 32 wherein the predetermined locations form a regular array.

Claim 34 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures, each microstructure being located with better than $10 \bullet \lambda_n$ accuracy at a predetermined location with respect to all other microstructures and each microstructure having a configuration that corresponds, with better than $10 \bullet \lambda_n$ accuracy, to a predetermined mathematical relation, where λ_n is the nominal operating wavelength of the apparatus and said predetermined locations and predetermined mathematical relations allow an a priori calculation of the spreading of incident light by the apparatus, wherein the predetermined locations form a hexagonal array.

Claim 35 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures, each microstructure being located with better than $10 \bullet \lambda_n$ accuracy at a predetermined location with respect to all other microstructures and each microstructure having a configuration that corresponds, with better than $10 \bullet \lambda_n$ accuracy, to a predetermined mathematical relation, where λ_n is the nominal operating wavelength of the apparatus and said predetermined locations and predetermined mathematical relations allow an a priori calculation of the spreading of incident light by the apparatus, wherein the predetermined locations are based on a set of unit cells which form a mosaic at least a portion of which is not a regular array.

Claim 36 (original): The apparatus of Claim 35 wherein the mosaic is random.

Claim 37 (original): The apparatus of Claim 35 wherein the apparatus has internal microstructures and edge microstructures and the mosaic provides at least some junctions between internal microstructures that correspond, in terms of light spreading, to at least some junctions between edge microstructures resulting from the tiling of two samples of the apparatus to one another.

Claim 38 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures, each microstructure being located with better than $10 \bullet \lambda_n$ accuracy at a predetermined location with respect to all other microstructures and each microstructure having a configuration that corresponds, with better than $10 \bullet \lambda_n$ accuracy, to a predetermined mathematical relation, where λ_n is the nominal operating wavelength of the apparatus and said predetermined locations and predetermined mathematical relations allow an a priori calculation of the spreading of incident light by the apparatus, wherein at least some of the predetermined locations are randomly distributed in accordance with a predetermined probability density function.

Claim 39 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures, each microstructure being located with better than $10 \bullet \lambda_n$ accuracy at a predetermined location with respect to all other microstructures and each microstructure having a configuration that corresponds, with better than $10 \bullet \lambda_n$ accuracy, to a predetermined mathematical relation, where λ_n is the nominal operating wavelength of the apparatus and said predetermined locations and predetermined mathematical relations allow an a priori calculation of the

spreading of incident light by the apparatus, wherein the predetermined locations are based on a random set of polygonal shaped boundaries.

Claim 40 (original): The apparatus of Claim 32 wherein at least a portion of the configuration of at least some of the microstructures corresponds with better than $10 \bullet \lambda_n$ accuracy to the mathematical relation:

$$s(x,y) = \frac{c\left[(x-x_c)^2+(y-y_c)^2\right]}{1+\sqrt{1-(\kappa+1)c^2\left[(x-x_c)^2+(y-y_c)^2\right]}} + \sum_p A_p\left[(x-x_c)^2+(y-y_c)^2\right]^{p/2}$$

where s(x,y) is the sag of said portion, c is its curvature, (x_c, y_c) is its center point, κ is a conic constant, and A_p are aspheric coefficients.

Claim 41 (original): The apparatus of Claim 40 wherein $A_p \neq 0$ for at least one p.

Claim 42 (original): The apparatus of Claim 40 wherein $\kappa \neq 0$.

Claim 43 (original): The apparatus of Claim 40 wherein:

(a) $\kappa = -1$; and

(b) $A_p = 0$ for all p.

Claim 44 (original): The apparatus of Claim 32 wherein at least a portion of the configuration of at least some of the microstructures corresponds with better than $10 \bullet \lambda_n$ accuracy to the mathematical relation:

$$s(x,y) = \sum_{p=1}^{\infty} B_p(x-x_c)^p + C_p(y-y_c)^p$$

where s(x,y) is the sag of said portion, (x_c, y_c) is its center point, and B_p and C_p are power series coefficients.

Claim 45 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures, each microstructure being located with better than $10 \bullet \lambda_n$ accuracy at a predetermined location with respect to all other microstructures and each microstructure having a configuration that corresponds, with better than $10 \bullet \lambda_n$ accuracy, to a predetermined mathematical relation, where λ_n is the nominal operating wavelength of the apparatus and said predetermined locations and predetermined mathematical relations allow an a priori calculation of the spreading of incident light by the apparatus, wherein at least some of the microstructures comprise (i) a curved, microlens portion and (ii) a straight-sided, piston portion.

Claim 46 (original): The apparatus of Claim 32 wherein at least some of the microstructures comprise an anamorphic microlens.

Claim 47 (original): The apparatus of Claim 32 wherein at least a portion of the configuration of at least some of the microstructures corresponds with better than $10 \bullet \lambda_n$ accuracy to the mathematical relation:

$$s(x,y) = \frac{c_x(x-x_c)^2 + c_y(y-y_c)^2}{1+\sqrt{1-(1+\kappa_x)c_x(x-x_c)^2 + (1+\kappa_y)c_y(y-y_c)^2}}$$

where s(x,y) is the sag of said portion, (x_c, y_c) is its center point, c_x and c_y are curvatures along x and y, respectively, and κ_x and κ_y are conic constants along x and y, respectively.

Claim 48 (original): The apparatus of Claim 32 wherein at least a portion of the configuration of at least some of the microstructures corresponds with better than $10\bullet\lambda_n$ accuracy to the mathematical relation:

$$s(x,y)=\frac{c_x(x-x_c)^2}{1+\sqrt{1-(1+\kappa_x)(x-x_c)^2}}+\frac{c_y(y-y_c)^2}{1+\sqrt{1-(1+\kappa_y)(y-y_c)^2}}+\sum_p A_{xp}(x-x_c)^p+A_{yp}(y-y_c)^p$$

where s(x,y) is the sag of said portion, (x_c, y_c) is its center point, c_x and c_y are curvatures along x and y, respectively, κ_x and κ_y are conic constants along x and y, respectively, and A_{xp} and A_{yp} are aspheric coefficients along x and y, respectively.

Claim 49 (original): The apparatus of Claim 32 wherein:

(a) at least some of the predetermined mathematical relations include at least one common parameter; and

(b) said at least one common parameter is randomly distributed in accordance with a predetermined probability density function.

Claim 50 (original): The apparatus of Claim 49 wherein the at least one randomly distributed common parameter has a uniform probability density function over a predetermined range for said common parameter.

Claim 51 (original): The apparatus of Claim 49 wherein the at least one randomly distributed common parameter is radius of curvature.

Claim 52 (original): The apparatus of Claim 49 wherein the at least one randomly distributed common parameter is maximum surface sag.

Claim 53 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures, each microstructure being located with better than $10 \bullet \lambda_n$ accuracy at a predetermined location with respect to all other microstructures and each microstructure having a configuration that corresponds, with better than $10 \bullet \lambda_n$ accuracy, to a predetermined mathematical relation, where λ_n is the nominal operating wavelength of the apparatus and said predetermined locations and predetermined mathematical relations allow an a priori calculation of the spreading of incident light by the apparatus, wherein:

(a) at least some of the predetermined mathematical relations include at least one common parameter;

(b) said at least one common parameter is randomly distributed in accordance with a predetermined probability density function; and

(c) the at least one randomly distributed common parameter is a parameter characteristic of the transverse size of a microstructure.

Claim 54 (original): The apparatus of Claim 53 wherein the parameter is diameter.

Claim 55 (original): The apparatus of Claim 32 wherein:

(a) at least some of the microstructures comprise (i) a curved, microlens portion, and (ii) a straight-sided, piston portion; and

(b) the heights of the straight-sided, piston portions are randomly distributed in accordance with a predetermined probability density function.

Claim 56 (original): The apparatus of Claim 55 wherein the heights of the straight-sided, piston portions have a uniform probability density function over a predetermined range for said heights.

Claim 57 (original): The apparatus of Claim 32 wherein:

(a) at least some of the microstructures have an apex; and

(b) the heights of at least some of said apexes are randomly distributed in accordance with a predetermined probability density function.

Claim 58 (original): The apparatus of Claim 57 wherein said randomly distributed heights have a maximum value and the difference between said maximum value and said randomly distributed heights has a uniform probability density function over a predetermined range for said difference.

Claim 59 (original): The apparatus of Claim 32 wherein the apparatus defines a first optical axis and the configuration of at least some of the microstructures comprises a microlens which defines a second optical axis which is not parallel to the first optical axis.

Claim 60 (original): The apparatus of Claim 32 wherein each microstructure is located with better than $5 \bullet \lambda_n$ accuracy at a predetermined location with respect to all other microstructures and each microstructure has a configuration that with better than $5 \bullet \lambda_n$ accuracy corresponds to a predetermined mathematical relation.

Claim 61 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures, each microstructure being located with better than $10 \bullet \lambda_n$ accuracy at a predetermined location with respect to all other microstructures and each microstructure having a configuration that corresponds, with better than $10 \bullet \lambda_n$ accuracy, to a predetermined mathematical relation, where λ_n is the nominal operating wavelength of the apparatus and said predetermined locations and predetermined mathematical relations allow an a priori calculation of the spreading of incident light by the apparatus, wherein the apparatus comprises two spaced-apart surfaces and the plurality of microstructures is distributed over both said surfaces.

Claim 62 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures, each microstructure being located with better than $10 \bullet \lambda_n$ accuracy at a predetermined location with respect to all other microstructures and each microstructure having a configuration that corresponds, with better than $10 \bullet \lambda_n$ accuracy, to a predetermined mathematical relation, where λ_n is the nominal operating wavelength of the apparatus and said predetermined locations and predetermined mathematical relations allow an a priori calculation of the spreading of incident light by the apparatus, wherein:

(a) the apparatus comprises two spaced-apart surfaces,

(b) the plurality of microstructures is distributed over one of said surfaces; and

(c) the other surface is a Fresnel lens.

Claim 63 (previously presented): An array of microstructures for use in an optical device wherein the array is close packed and at least some of the microstructures comprise (i) a curved, microlens portion and (ii) a straight-sided, piston portion.

Claim 64 (previously presented): The array of Claim 63 wherein the curved, microlens portion has a spherical shape.

Claim 65 (previously presented): A microstructure for use in an optical device comprising (i) a curved, microlens portion and (ii) a straight-sided, piston portion wherein the curved, microlens portion has a parabolic shape.

Claim 66 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures wherein at least a portion of each microstructure is described by the equation:

$$s(x,y)=\frac{c\left[(x-x_c)^2+(y-y_c)^2\right]}{1+\sqrt{1-(\kappa+1)c^2\left[(x-x_c)^2+(y-y_c)^2\right]}}+\sum_p A_p\left[(x-x_c)^2+(y-y_c)^2\right]^{p/2}$$

where s(x,y) is the sag of said portion, c is a predetermined curvature, (x_c, y_c) is a predetermined center point, κ is a predetermined conic constant, A_p are predetermined aspheric coefficients, and at least κ is not equal to zero.

Claim 67 (original): The apparatus of Claim 66 wherein:

(a) $\kappa = -1$; and

(b) $A_p = 0$ for all p.

Claim 68 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures wherein at least a portion of each microstructure is described by the equation:

$$s(x,y)=\frac{c_x(x-x_c)^2+c_y(y-y_c)^2}{1+\sqrt{1-(1+\kappa_x)c_x(x-x_c)^2+(1+\kappa_y)c_y(y-y_c)^2}}$$

where s(x,y) is the sag of said portion, (x_c, y_c) is a predetermined center point, c_x and c_y are predetermined, non-equal, non-zero curvatures along x and y, respectively, and κ_x and κ_y are predetermined conic constants along x and y, respectively.

Claim 69 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures wherein at least a portion of each microstructure is described by the equation:

$$s(x,y)=\frac{c_x(x-x_c)^2}{1+\sqrt{1-(1+\kappa_x)(x-x_c)^2}}+\frac{c_y(y-y_c)^2}{1+\sqrt{1-(1+\kappa_y)(y-y_c)^2}}+\sum_p A_{xp}(x-x_c)^p+A_{yp}(y-y_c)^p$$

where s(x,y) is the sag of said portion, (x_c, y_c) is a predetermined center point, c_x and c_y are predetermined, non-equal, non-zero curvatures along x and y, respectively, κ_x and κ_y are predetermined conic constants along x and y, respectively, and A_{xp} and A_{yp} are predetermined aspheric coefficients along x and y, respectively.

Claim 70 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures, each microstructure having a configuration that is characterized by at least one predetermined

parameter which is randomly distributed in accordance with a predetermined probability density function, wherein said microstructures form an array having a total array depth range of at least 10 microns.

Claim 71 (original): The apparatus of Claim 70 wherein the at least one randomly-distributed parameter has a uniform probability density function.

Claim 72 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures, each microstructure having a configuration that is characterized by at least one predetermined parameter which is randomly distributed in accordance with a predetermined probability density function, wherein:

(a) each microstructure comprises (i) a curved, microlens portion and (ii) a straight-sided, piston portion; and

(b) the randomly-distributed parameter characterizes the straight-sided, piston portion.

Claim 73 (original): The apparatus of Claim 70 wherein each microstructure is characterized by two predetermined parameters, each of which is randomly distributed in accordance with a predetermined probability density function which may be the same or different for the two parameters.

Claim 74 (original): The apparatus of Claim 73 wherein each of the randomly-distributed parameters has a uniform probability density function over a predetermined range for the parameter.

Claim 75 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures, each microstructure having a configuration that is characterized by at least one predetermined parameter which is randomly distributed in accordance with a predetermined probability density function, wherein:

(a) each microstructure is characterized by two predetermined parameters, each of which is randomly distributed in accordance with a predetermined probability density function which may be the same or different for the two parameters;

(b) each microstructure comprises (i) a curved, microlens portion and (ii) a straight-sided, piston portion; and

(c) one of the two randomly-distributed parameters characterizes the curved, microlens portion and the other randomly-distributed parameter characterizes the straight-sided, piston portion.

Claim 76 (original): The apparatus of Claim 70 wherein the locations of the microstructures is randomized in accordance with a predetermined probability density function.

Claim 77 (previously presented): A structured screen comprising a plurality of predetermined microstructures, wherein:

(a) said microstructures comprise (i) a curved, microlens portion and (ii) a straight-sided, piston portion which has a predetermined height which for at least some of said microstructures is not zero;

(b) said curved, microlens portions have predetermined diameters and predetermined maximum sags; and

(c) for at least some of said microstructures, the sum of the predetermined maximum sag and the predetermined height is greater than the predetermined diameter.

Claim 78 (previously presented): A structured screen comprising a plurality of predetermined microstructures, wherein:

(a) said microstructures comprise (i) a curved, microlens portion and (ii) a straight-sided, piston portion which has a predetermined height which can be zero;

(b) said curved, microlens portions have predetermined diameters and predetermined maximum sags; and

(c) for at least some of said microstructures, the sum of the predetermined maximum sag and the predetermined height is greater than the predetermined diameter;

wherein at least one of the predetermined diameters, the predetermined maximum sags, and the predetermined heights is randomly distributed in accordance with a predetermined probability density function.

Claim 79 (original): The structured screen of Claim 78 wherein the predetermined diameters have a uniform probability density function over a predetermined range for said diameters.

Claim 80 (original): The structured screen of Claim 78 wherein the predetermined maximum sags have a uniform probability density function over a predetermined range for said maximum sags.

Claim 81 (original): The structured screen of Claim 78 wherein the predetermined heights have a uniform probability density function over a predetermined range for said heights.

Claim 82 (original): A structured screen comprising a plurality of predetermined aspherical microlenses, wherein said microlenses:

(a) have predetermined diameters and predetermined maximum sags; and

(b) produce a spread of incident light which has a flatter intensity distribution than that produced by a plurality of spherical microlenses having the same predetermined diameters and predetermined sags..

Claim 83 (original): The structured screen of Claim 82 wherein at least one of the predetermined diameters and the predetermined maximum sags is randomly distributed in accordance with a predetermined probability density function.

Claim 84 (original): The structured screen of Claim 83 wherein the predetermined diameters have a uniform probability density function over a predetermined range for said diameters.

Claim 85 (original): The structured screen of Claim 83 wherein the predetermined maximum sags have a uniform probability density function over a predetermined range for said maximum sags.

Claim 86 (original): The structured screen of Claim 82 wherein at least some of the microlenses are parabolic.

Claim 87 (currently amended): A structured screen which defines an optical axis and comprises a plurality of microstructures at least some of which comprise a ~~non-cylindrical~~ microlens having an optical axis which is not parallel to the optical axis of the structured screen, wherein at least some of the microstructures have a configuration that is characterized by at least one predetermined parameter which is randomly distributed in accordance with a predetermined probability density function.

Claim 88 (currently amended): A structured screen comprising:

(a) a Fresnel lens which comprises a plurality of surfaces in the form of concentric rings; and

(b) a plurality of microstructures distributed over at least some of said plurality of surfaces, said plurality of microstructures serving to control the spread of light incident on the structured screen;

wherein at least some of the microstructures have a configuration that is characterized by at least one predetermined parameter which is randomly distributed in accordance with a predetermined probability density function.

Claim 89 (previously presented): A structured screen comprising a plurality of unit cells and a plurality of microstructures, one microstructure associated with each unit cell, wherein the perimeters of the unit cells are non-regular polygons distributed so as to form a Voronoi tessellation.

Claim 90 (original): The structured screen of Claim 89 wherein the perimeters are defined by a predetermined probability density function.

Claim 91 (original): A structured screen comprising a plurality of microstructures at least some of which comprise a microlens having a first curvature in a first direction and a second curvature in a second direction orthogonal to the first direction, at least one of said first and second curvatures being randomly distributed in accordance with a predetermined probability density function.

Claim 92 (original): The structured screen of Claim 91 where both the first and second curvatures are randomly distributed in accordance with a predetermined probability density function which may be the same or different for the two curvatures.

Claim 93 (original): A structured screen comprising:

(a) a first sub-screen comprising a plurality of internal microstructures and a plurality of edge microstructures, each microstructure being located at a predetermined location with respect to all other microstructures, said predetermined locations being based on a first set of unit cells which form a first mosaic;

(b) a second sub-screen comprising a plurality of internal microstructures and a plurality of edge microstructures, each microstructure being located at a predetermined location with respect to all other microstructures, said predetermined locations being based on a second set of unit cells which form a second mosaic;

wherein:

(i) the first and second sub-screens are tiled to one another, said tiling producing edge junctions between edge microstructures of the first sub-screen and edge microstructures of the second sub-screen; and

(ii) each of the first and second mosaics provides at least some internal junctions between internal microstructures that correspond, in terms of light spreading, to at least some of the edge junctions.

Claim 94 (original): The structured screen of Claim 93 wherein each of the first and second mosaics is random.

Claim 95 (original): The structured screen of Claim 93 wherein the first and second sub-screens are identical.

Claim 96 (previously presented): Apparatus for controlled spreading of light comprising a plurality of microstructures, each microstructure having a configuration that is characterized by at least one predetermined parameter which is randomly distributed in accordance with a predetermined probability density function, wherein:

(a) each microstructure comprises (i) a curved, microlens portion and (ii) a straight-sided, piston portion; and

(b) the randomly-distributed parameter characterizes the curved, microlens portion.

Claim 97 (new): A structured screen which defines an optical axis and comprises a plurality of microstructures at least some of which comprise a non-cylindrical microlens having an optical axis which is not parallel to the optical axis of the structured screen, wherein the plurality of microstructures has an arrangement which is not rotationally symmetric.

Claim 98 (new): The structured screen of Claim 97 wherein at least some of the microstructures have a configuration that is characterized by at least one predetermined parameter which is randomly distributed in accordance with a predetermined probability density function.

Claim 99 (new): The structured screen of Claim 97 wherein the plurality of microstructures has a 100 percent fill factor.

Claim 100 (new): A structured screen comprising:

(a) a Fresnel lens which comprises a plurality of surfaces in the form of concentric rings; and

(b) a plurality of microstructures distributed over at least some of said plurality of surfaces, said plurality of microstructures serving to control the spread of light incident on the structured screen;

wherein the plurality of microstructures has an arrangement which is not rotationally symmetric.

Claim 101 (new): The structured screen of Claim 100 wherein at least some of the microstructures have a configuration that is characterized by at least one predetermined parameter which is randomly distributed in accordance with a predetermined probability density function.

Claim 102 (new): The structured screen of Claim 100 wherein the plurality of microstructures has a 100 percent fill factor.

Claim 103 (new): The structured screen of Claim 87 wherein the plurality of microstructures has a 100 percent fill factor.

Claim 104 (new): The structured screen of Claim 88 wherein the plurality of microstructures has a 100 percent fill factor.

Claim 105 (new): The structured screen of Claim 89 wherein the plurality of microstructures has a 100 percent fill factor.